GEOGRAPHIC NEWS BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated under the Federal law as a non-commercial institution for the increase of geographic knowledge and its popular diffusion.)

General Headquarters, Washington, D. C.

Contents for Week of October 10, 1932. Vol. XI. No. 13.

NOTE TO TEACHERS.—This is the first issue of the Geographic News Bulletins for the school year, 1932-33. No Bulletins were issued during the summer vacation months.

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See Important Notice Following Bulletin No. 3.

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FISH WIVES WHO WILL BECOME FARM WIVES

Volendam, one of the most picturesque of the fishing villages along the former Zuiderzee, is destined to become a rural center. A new dike, shutting off the North Sea, will eventually add thousands of acres of farmland to Holland's domain. Note the wooden shoes by the doorway, removed while their owner visits the village grocery. Wearing of wooden shoes, however, survives only in the rural districts (See Bulletin No. 2).

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic News Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers for one year upon receipt of 25 cents (in stamps or money order). Entered as second-class matter, January 27, 1922, at the Post Office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized February 9, 1922.

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Jehol, New Province in the Manchurian Spotlight

OFTEN in news dispatches from the Far East appears the name "Jehol." Recently Japanese troops conducted a vigorous campaign along the Jehol border against roving bands of soldiery and outlaws. Where and what is Jehol?

Jehol is one of four provinces that, since 1929, make up the new Manchuria. The Chinese National Government placed it under Marshal Chang Hsio-liang, the Manchurian war lord, when he adopted the national flag. To-day the Japanese-created state of Manchukuo claims that Jehol is within its borders, although no attempt has yet been made by the Japanese to occupy the province formally.

Once Summer Resort of Manchu Emperors

If modern newspapers had been printed two centuries ago, Jehol activities would have been frequently in the headlines. It was the summer place of Manchu Emperors. In some thirty magnificent palace buildings, several of the great Manchurian leaders were born, lived or died.

The province is about as long as New York State, measured from New York City northward to its northern border, and about as wide. It also lies nearly in the same latitude as the Empire State.

For the most part the region is hilly. The Great Khingan Mountains form its western border. The southern part of the province is almost devoid of vegetation. Hungry seekers for fuel have even stripped trees, roots, and bushes from the soil. In winter, it is a common sight to see natives raking the ground for bits of firewood.

The Rocky Road to Jehol City

Lack of transportation is, perhaps, the most serious drawback of Jehol. No railroads enter the province; it has no seashore; and it has no large rivers. Roads are hardly more than paths, over which pack animals and rude carts pass. In some regions automobile trucks link towns. Wooden seats for passengers are placed around the sides of the trucks. After the traveler thinks the vehicle is full to capacity, more passengers enter the vehicle and occupy as small spaces as possible on the floor. Ten miles an hour is a high speed on Jehol roads.

An automobile ride reminds the experienced traveler of a voyage on a rough sea in a small boat, for the way usually consists of a series of boulders and holes. When Jehol awakens, about 80,000,000 tons of anthracite and 850,000,000 tons of bituminous coal will be ready for world markets.

Jehol city is reached after about 144 miles of rough traveling from Peiping. On the route the traveler passes through typical villages of southern Jehol, with their native inns built of mud. A warm brick bed and a smoky lamp are all that the innkeeper provides. Millett cooked as rice, and buckwheat flour made into dough strings, bean curd and cabbage are the chief foods served to guests.

Hides, Wool and Furs Principal Exports

The Jehol district exports hides, sheep's wool for carpet making, bristles, licorice root, and furs. When crops are good, some millett, sorghum, beans, buckwheat, cotton, tobacco and melons find their way to outside markets.

Jehol city is but a skeleton of the city it once was. The six-mile wall that surrounded the imperial estate no longer protects magnificent palaces, but the ruins

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© *Donald McLeish*

IT WOULD BE A "DOG'S LIFE" IF IT WERE NOT FOR THE PRETTY MILKMAID!

In Holland the morning milk delivery in small towns is made with this light cart. The dog, as a draft animal, plays almost as important a part in the lives of the people of the Netherlands as it does in the Arctic. The dogs are cheerful workers and are very seldom abused (See Bulletin No. 2).

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Holland's Historic Zuiderzee Becomes Farmland and Lake

GET out your map of Holland and strike out the name "Zuiderzee." Most of the water of the former salt-water gulf remains, but Dutch engineers have divorced it from the North Sea by an 18-mile dike (See map, next page).

Part of the old Zuiderzee will become a fresh-water lake, to be known as Ijessel Lake, or, in the Dutch, Ijesselmeer. Most of it, however, will be pumped dry and developed into neat Dutch farmsteads. A large section of the former Zuiderzee back of the island of Wieringen has already been reclaimed. Crops were harvested this year from land which in 1930 was covered with sea water.

Dutch Are Recapturing Former Territory

In separating the Zuiderzee from the ocean the Dutch are no more than reclaiming their own. Six hundred years ago much of the late Zuiderzee was dry land, protected from the North Sea by sand dunes. Then the sea rolled in. To-day a huge man-made dike makes possible an increase in the total land area of The Netherlands of 7 per cent, and in the arable land of 10 per cent.

The Zuiderzee basin, with an area of more than 550,000 acres, is almost as large as the State of Rhode Island. Situated in the very heart of northern Holland, it has played an important part in the commerce and social life of the country. While Holland is rejoicing with her engineers in their greatest victory over their ancient foe, the sea, the fishing villages and quaint islands of the Zuiderzee, beloved of tourists, are silent. Most of the seaports along the shores of the Zuiderzee are destined to become inland farming villages, connected with salt water only by canals, while islands may be hillocks, only slightly raised from encircling fields of grain, vegetables and flowers.

Among the ports which will become rural centers are Edam, famous for its globular red cheeses. It once was the water-gate to Amsterdam, when the only approach to the greatest of Dutch cities was via the Zuiderzee. Now a deep canal connects Amsterdam directly with the North Sea. Artists will miss the water front at Volendam and the arrival of the little fishing schooners each Saturday morning. Hoorn will live in the annals of the sea, however, in "Cape Horn," the southernmost tip of South America.

Romantic Isle of Marken

Perhaps the most lamented change will be that affecting the Isle of Marken, which is destined to become a part of the southeast polder, or drained section. This island, detached from the mainland in the thirteenth century, lies out of the ordinary routes of travel. Its inhabitants have kept the quaint costumes and queer ceremonies that prevailed when their land became an island. The ground is barely above the water at high tide, but the houses are built on hillocks of earth obtained by digging drainage canals. On seven of these mounds brick and frame dwellings are grouped, while on the eighth is the silent home of the dead.

Colorful as the ports and islands of the Zuiderzee may be, they have outlived most of their usefulness. Holland's rapidly growing population demands more farm lands. The Zuiderzee, the greater part of which had hardly more than 15 feet of water at low tide, offered a source of new land.

The land to be reclaimed will be roughly divided into four sections, or polders, by Lake Ijessel, and the mouths of the Amstel and Ijessel rivers. Ijessel Lake itself, when drainage operations are completed, will be a long, funnel-shaped body of water running back from the new dike to the Ijessel (Ijsel) River. It will be a

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of them. The traveler may peer through a window of one of the buildings and enjoy vistas that once thrilled the imperial families.

The palace buildings were carefully spread about the estate, some of them rising tier upon tier up the slopes of rolling hills. One of the principal features of the estate is a huge lake adorned with man-made islands. Brightly painted, gracefully arched bridges of wood and marble spanned creeks and canals. A labyrinth of walks traversed the grounds, passing in the shadows of beautiful pagodas.

The summer palaces were built in the early part of the eighteenth century. The place was struck by lightning in 1820 and the emperor, believing the occurrence a bad omen, deserted it. It was not occupied again until 1860, when Emperor Hsien Feng fled there from Peiping. He lived less than a year after his arrival, demonstrating to the satisfaction of the imperial family that evil spirits inhabited the place. On two later occasions when Manchu rulers fled from Peiping they sought other sanctuaries than Jehol.

Note: Manchuria, its untouched resources and rapid development in recent years, are described in "Byroads and Backwoods of Manchuria," *National Geographic Magazine*, January, 1932; and "Manchuria, Promised Land of Asia," October, 1929. Additional references: "A Thousand Miles along the Great Wall of China," February, 1923; and the following GEOGRAPHIC NEWS BULLETINS: "Last of the Manchus Heads Asia's Newest State," March 28, 1932; "Tsitsihar, Walled Capital of Manchuria's Largest Province," December 7, 1931; "Sungari River, Busy Manchurian Trade Route," November 2, 1931; "Chinchowfu, Temporary Chinese Capital of Manchuria," December 14, 1931; "China's Great Wall Again Is the Frontier," January 25, 1932; and "Manchuria, Transformed by Railways," October 12, 1931.

Bulletin No. 1, October 10, 1932.

© *Photograph by Knud Sorensen*

THE MUKDEN-TIENTSIN RAILWAY RUNS NEAR JEHOL'S SOUTHERN BORDER

Sweets hawkers at one of the stations on the line connecting Manchuria with northern China. As in some Latin-American countries, travelers in this part of Manchuria depend for food on platform peddlers. Sugared crab apples strung on straws, chestnuts, hot tea, pastry and fruit are in demand.

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Mercury, Liquid Metal of a Thousand Uses

ALTHOUGH the United States uses more mercury than any other country, it must import over a third of its need for this liquid metal from Europe. It is, therefore, of more than local importance that new deposits of mercury were found recently in Arkansas.

Mercury has been known for at least 2,500 years, but its wide use is a development of recent times. To-day it is employed in about a thousand different ways.

On Land, on Sea, and in the Air

A thin thread of the silvery liquid metal sealed in a glass thermometer tube has been man's aid in determining temperatures; in barometers, weather forecasters depend upon it to foretell changes in weather; in altimeters, it aids aviators to determine how high they are flying; and marine engineers use it in meters to estimate the flow of water.

Mercury often does its best work where man least expects it. The life of many a sleeping voyager is guarded by huge lighthouse beacons that revolve on floating mercury bearings, and many toothaches have been avoided by gold or silver amalgam teeth fillings made possible by mercury. The life of dry batteries is prolonged because mercury protects their zinc plates.

The golfer plays on velvety greens and the farmer harvests healthy crops because a small quantity of mercury, mixed with fertilizers, kills insects that attack plant roots. The shipowner cleans the scale from the boilers of his ships with mercury and covers the hulls with paint containing mercury because it thwarts the rapid growth of barnacles. When fashion decrees that felt hats should be "nappy," the hat manufacturer produces the desired effect with mercury.

Loses Its Identity in Mixtures

But the metal loses its identity in various kinds of mixtures. It is in milady's rouge box and lipstick case, where it helps to produce pink cheeks and red lips. The "silvered" mirror into which she peers to apply her cosmetics is, in reality, a "mercuried" mirror.

About one-third of the world's supply of mercury is used in the drug and chemical industries. It helps to produce soda used in the manufacture of artificial silk and is an ingredient of some dyes.

It is mercury that produces the green lights, and helps to produce the blue lights, in colored light advertising signs. Because it is dependable in maintaining even temperatures during oil distilling operations, it is an important "tool" of the oil industry.

As a safe, dependable detonator for explosives, it was one of the so-called war minerals during the World War. In peace times it helps to blast tunnels through mountains and gouge cuts for railroads and highways, razes tree stumps and stones to clear land for many purposes, loosens limestone, granite and marble from quarries for new buildings, and dislodges minerals from mines.

Spain Is Chief Source

Radio programs are amplified in American living rooms by radio tubes, in the manufacture of which mercury had a part, and many electrical devices used in modern buildings were produced with the aid of mercury. One of the most

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mere shadow of the former Zuiderzee. Most of the new land will be reclaimed from the huge, stomach-shaped southwestern end of the Zuiderzee.

North Holland has undergone many changes in its water-washed boundaries. The first efforts were precautionary, the war with the waters being wholly on the defensive. The holding of the streams in check, keeping them within their proper channels, allowed some of the marshes to become dry. This gain of land whetted the people's appetite for more. Dutch farmers yearned for thousands of acres too shallow for fisheries but ideal for pasture land to produce cheeses for foreign markets. This led to draining of inland lakes and coastal strips by windmills—the most characteristic feature of Holland landscapes.

Note: For supplementary reading and photographs of Holland see also "A Vacation in Holland," *National Geographic Magazine*, September, 1929; "Holland's War with the Sea," March, 1923; and "Singing Towers of Holland and Belgium," March, 1925. Dutch possessions overseas are described in: "Among the Hill Tribes of Sumatra," February, 1930; "Java, Queen of the East Indies," September, 1929; "Artist Adventures on the Island of Bali," March, 1928; "A Modern Saga of the Seas" (Curaçao and Aruba), December, 1931, and "Skypaths Through Latin America" (Dutch Guiana), January, 1931.

Bulletin No. 2, October 10, 1932.

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SKETCH MAP OF HOLLAND SHOWING NEW DIKE

While Holland proper has an area equal only to the combined land areas of Maryland and Delaware, its rich colonial possessions include vast holdings in the East Indies, in Dutch Guiana, and in the West Indies.

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Eclipse Expedition Gets Rare Photographs from Five Miles Up

BOTH from the ground and from the air the National Geographic Society's Eclipse Expedition recorded the eclipse of the sun in New England August 31, through a series of remarkable photographs, several of which show aspects never before revealed.

Flying more than five miles above the earth, Captain Albert W. Stevens, noted Army Air Corps photographer, and leader of the aerial unit of The Society's Eclipse Expedition, had a view seen by probably only a little handful of men since the world began. It was the spectacle of the dark shadow of the moon racing at a tremendous speed, about a mile a second, over the tops of the clouds, themselves two miles above the earth.

Gigantic Celestial Hurdle Race

The onrush of the moon's shadow was awe-inspiring beyond description, Captain Stevens reported. He likened it to a gigantic celestial hurdle race staged only for eyes that could view it from miles above earth and clouds.

For 30 miles he and Lieut. Charles D. McAllister, his pilot, watched the approaching great dark spot of shadow, moving at a speed greater than that of a rifle bullet, as it topped cloud bank after cloud bank, apparently sinking to earth between the clouds, finally to rush under the plane after totality and to disappear quickly at sea.

The cloud masses which spelled disaster to the plans of many of the observation parties on the ground thus actually were a help to the aerial unit of the National Geographic Society eclipse expedition. With a short focus, wide angle lens, Captain Stevens made exposures of the approaching shadow at five second intervals.

Observation conditions of the sun itself, from the plane nearly 27,000 feet above sea level, were ideal. Through the crystal clear air, unobscured by clouds or haze, the delicate colors of the corona and the prominences were visible in their full glory. A number of black and white photographs were taken of these direct phenomena.

While this work was progressing above the clouds, the ground unit of The Society's expedition at North Conway, New Hampshire, was having a somewhat less successful time in its efforts to make the first natural color photographs of the corona. In spite of light, broken clouds, the corona was visible from the party's site on the 2,370-foot summit of Black Cap Mountain, and the battery of cameras, some with telescopic lenses, was kept busy throughout totality.

In charge of this mountain top unit were: Charles Martin, chief of The Society's photographic laboratory; Albert H. Bumstead, chief cartographer; and Newman Bumstead. With the assistance of local enthusiasts the heavy telescopic photographic equipment was carried up the mountain and back again in the same day, the delicate nature of the instruments not permitting them to be left there overnight. Six rehearsals preceded the actual two hours' work of recording each phase of the eclipse.

Temperature Drop Noticeable

In addition to the sky shots, several unusual photographs were obtained of the advancing and retreating moon shadow as it progressively darkened surrounding mountain peaks. The wild rolling landscape of the Black Cap region, particularly in the directions of Lake Sebago and distant Mount Washington, offered a dramatic setting for these "play by play" snaps of the moving band of darkness.

Temperature observations were made and, although the results scheduled have not yet been fully tabulated, it was found that a temperature of 77 degrees Fahrenheit early in the period of totality dropped to 67.7 degrees later in that period. After totality the temperature rose immediately to 69 degrees. Two hours before the eclipse the thermometer had registered over 80 degrees. Mr. Albert Bumstead contrasted these temperatures with those he had recorded during the last previous eclipse in this region, January, 1925, when the mercury fell to 5 degrees below zero, and the moon shadow bands could be seen playing on the snow. The shadow bands of the recent eclipse were ill-defined and barely discernible.

In describing the appearance of the corona from a height of five miles, Captain Stevens emphasized the delicacy of the coloring. To identify points around the sun's disk he adopted in his report to the National Geographic Society the device of indicating the positions by comparison to those of an hour hand in its travels around a clock-face.

"The corona," he said, "had a very marked extension or protuberance, giving a very sharp point at a position, relative to the sun, corresponding to the position of the hour hand at half

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outstanding recently developed uses of mercury is in power plants. A new plant uses mercury vapor instead of steam.

Now and then mercury is found in its liquid metal state, but more often it appears in a red mercury-sulphur ore, called cinnabar, from which the metal is extracted by a roasting process.

Mercury is known to exist on every continent, but most of the world's supply comes from Spain and Italy, with Spain leading in production. The mines at Almaden, Spain, have been worked since the Romans occupied the Iberian Peninsula, and some engineers say that there remains enough of the metal to meet the world's demand for a thousand years at the present rate of consumption. The mines which give Italy second rank among mercury-producing countries are situated near Trieste and in Tuscany. The former were worked by the Austrians prior to the World War.

The United States is third on the mercury production list, with California leading the "mercury States" which include Oregon, Nevada, Washington, Texas, and Arizona. The metal also is mined in Alaska, Mexico, Canada, China, Russia, Czechoslovakia, Austria, Algeria, Japan, Rumania, New Zealand and Australia.

Bulletin No. 3, October 10, 1932.

A Gift to Education—How Teachers May Cooperate

THE GEOGRAPHIC NEWS BULLETINS are a gift of the National Geographic Society to education. This is the first issue of 30 numbers, each containing five illustrated Bulletins, to be mailed weekly during the current school year. The Bulletins report the geography of recent events of world importance.

Because these Bulletins represent a substantial gift to schools from The Society's educational fund, the expense of advertising or circulation promotion cannot be undertaken as would be the case with a commercial publication. The Society must rely upon supervisory officials and teachers to call them to the attention of their colleagues who might use them effectively. This should be done promptly so that applicants may be put upon the mailing list to receive the early issues.

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Bolivia, Paraguay and the Gran Chaco Trouble Zone

BOLIVIA and Paraguay, disputing the region of the Gran Chaco, are the only two of ten republics and three colonies in South America which have no sea coast.

Paraguay does have a water outlet through the Paraguay and Paraná river system; but Bolivia is without a natural outlet save in its remote and largely undeveloped northeastern edge, from which some forest products make the slow, 1,500-mile water journey down the Madeira and Amazon rivers to the Atlantic.

River Outlet More Desired Than Actual Land

If Bolivia should make good its demand to the disputed Chaco, this would provide a river outlet, which is more desired than the actual jungle land of the region. Bolivia would then control the west bank of a long section of the Paraguay River, with Paraguay controlling the east bank. If, on the other hand, Paraguay's claim is upheld, that country will own both banks of the river for 200 miles north of Asunción, the Paraguayan capital, thus controlling the stream through most of the navigable portion that remains above that city.

Bolivia, with an area slightly greater than half a million square miles, is the fourth largest country in South America, and lacks only a few thousand square miles of equaling Peru, third largest. Its population is almost three millions.

The country has not always been cut off from the sea. When it was formed in 1825 after the colonies revolted from Spain, it claimed as a part of its territory what is now the province of Antofagasta, Chile, with 300 miles of coast along the Pacific, and several good ports, including Antofagasta. When rich beds of nitrate of soda were discovered in this region, disputes arose with Chile, and in 1866 the two republics agreed that the 24th parallel of latitude, a few miles south of the town of Antofagasta, should be their common boundary.

When Bolivia Became an Inland Nation

Later further disputes arose over the nitrate beds and taxation, which brought war between Chile on one side, and Bolivia and Peru on the other. As a result of this war, in which Chile was victorious, Bolivia and Peru lost together more than 400 miles of coast. This war made Bolivia an inland country. The situation was bettered somewhat in 1905 by the construction by Chile of a railway from the port of Arica to La Paz, the capital of Bolivia. Over these rails Bolivian exports and imports are permitted to move freely through Chilean territory.

Paraguay is one of the smallest of the South American republics. If only its undisputed territory is considered, it is smallest of all, with 61,647 square miles. Its closest competitor for smallness, Uruguay, has an area of approximately 72,000 square miles. If Paraguay had added to it, however, the Chaco region under dispute, it would be doubled in size. The population is about 843,000.

Paraguay has had an unusual history. From 1605, for a century and a half, the country was ruled by Spanish missionaries who carried on extensive agricultural enterprises by the work of the native Indians. The missionaries were expelled in 1769. In 1840 the country fell into the hands of a dictator, Carlos Lopez, and later passed to his son Antonio. Under the younger Lopez, Paraguay was the scene from 1865 to 1870 of the bloodiest war the Western Hemisphere has known during historic times. The dictator fought at once against invading armies from Brazil, Uruguay and Argentina. Of a population of 1,337,000 before the war less

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past 10 on a clock-face. At the positions corresponding to 4 and 5 o'clock there were other protuberances.

"At totality the entire corona had sprung into sight very much as if someone had snapped an electric switch. The color of the corona was a pale white. The 5 o'clock protuberance had a rose tint. The long one at 10:30 was a delicate bluish white.

"At the moment of the reappearance of the sun's disk the sun appeared as a point of light. At high altitude even this pinprick of light was so dazzling that it could not be viewed by the naked eye. The corona instantly disappeared.

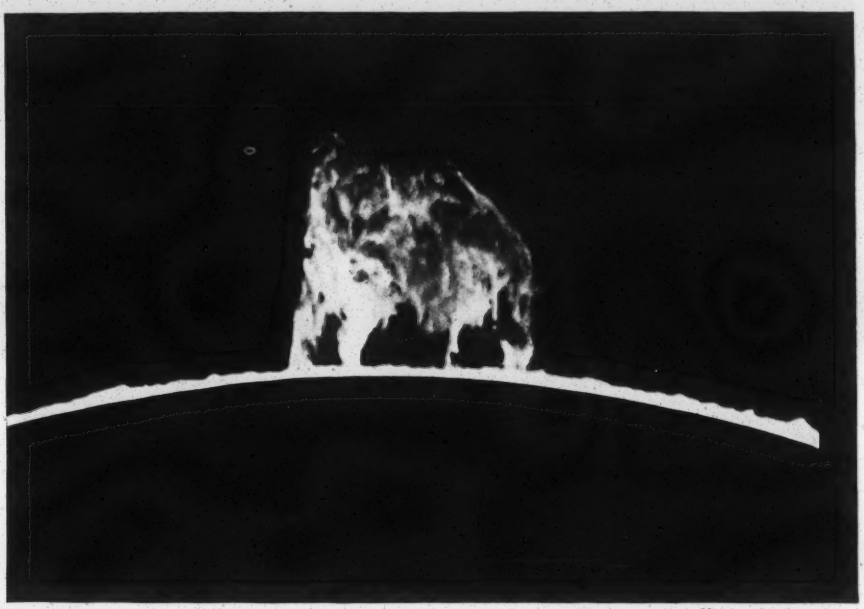
"The most remarkable aspect of the shadow, visually, was the appearance of the far edge. Near the horizon, it had a saffron color. Between the observer and the horizon the air appeared of an indigo color. The color of the horizon line can best be described as being that of steel just before it is ready to melt."

Captain Stevens reported an unusual phenomenon which appeared fifteen minutes before totality. It was a formation that appeared to be made up of streamers of light like long columns extending from the clouds earthward. He believes that it was caused by the sharper projective power of the sun when its area was reduced. The effect was photographed. The temperature aloft was 16 degrees below zero, Fahrenheit.

In addition to the photographic equipment, Captain Stevens took aloft an apparatus for measuring the intensity of cosmic rays. It consisted of a very sensitive electroscope and a device for recording its readings photographically at definite time intervals. This cosmic ray apparatus was started twenty minutes before totality and was kept running for twenty minutes after totality while the airplane was kept at a constant elevation.

Note: Captain Stevens' aerial photographs and other data obtained by the National Geographic Society's Eclipse Expedition will appear in the November, 1932, issue of the *National Geographic Magazine*. For a diagram showing how eclipses occur see: "Interviewing the Stars," *National Geographic Magazine*, January, 1925. For supplementary reading about solar radiation consult: "Hunting an Observatory," October, 1926; "Keeping House for the Shepherds of the Sun," April, 1930; and "Measuring the Sun's Heat and Forecasting the Weather," January, 1926.

Bulletin No. 4, October 10, 1932.



© Photograph from Yerkes Observatory

A "WOOLY ELEPHANT" ON THE RIM OF THE SUN

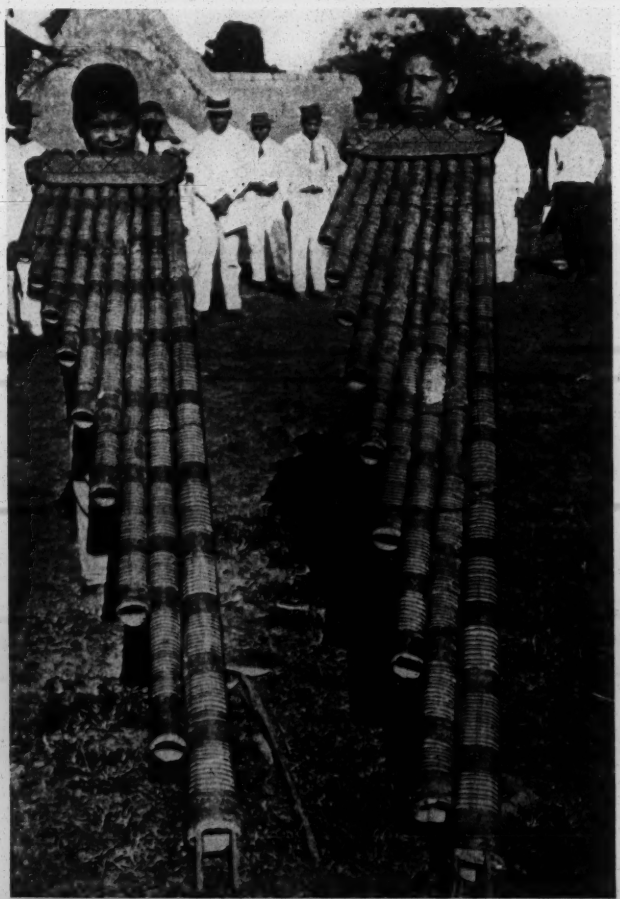
Vast eruptions on the surface of the sun send forth huge columns of flame that shoot out hundreds of thousands of miles into space at immense speeds. If similar flames poured out from the surface of the earth, they would engulf the moon. Some of these assume bizarre shapes, as in the case of the "Woolly Elephant." Today we have safe helium gas for American dirigibles like the *Akron* and *Los Angeles* because Lockyer, in 1868, discovered the gas in the sun's spectrum during an eclipse, leading the way for chemists like Ramsay to isolate it for our use.

than 225,000 remained alive after the defeat and death of Lopez. Of these, only 29,000 were men. The population has never reached the pre-war figure, and for decades Paraguay was predominantly a land of women.

The portion of the Gran Chaco, over which Bolivia and Paraguay have quarreled, is a region of indefinite extent that lies between the Paraguay and Pilcomayo rivers. Paraguay's greatest claim is for 100,000 square miles. A line of opposing forts, however, has been established by the two countries, through the Chaco, roughly parallel to the Paraguay River and about 125 miles west of that stream. This line incloses less than 50,000 square miles of the Chaco with Paraguay proper. The Chaco is a broad, low region, covered in part by grass and in part by forests. Little development has taken place and its inhabitants are chiefly Indians.

Note: See also: "Flying the World's Longest Airmail Route," *National Geographic Magazine*, March, 1930; "Buenos Aires to Washington by Horse," February, 1929; "How Latin America Looks from the Air," October, 1927; "Heart of Aymará Land," February, 1927; and "Buenos Aires and Its River of Silver," October, 1921.

Bulletin No. 5, October 10, 1932.



© *Photograph from Stewart E. McMillin*

ONE-MAN PIPE ORGANS OF THE BOLIVIAN INDIANS

Not far from the disputed Gran Chaco region in South America modern Children of the Sun play on "Panpipes" that were in use long before the arrival of the Spanish Conquistadores.